Space Weather Forecast

Issued on Saturday, 13 August 2022 at 00:13 Local

This forecast provides a four-day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

Space Weather Forecast Headline: No significant activity.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity has been low over the past 24 hours, although the cadence of small common-class X-ray flares detected has increased relative to earlier in the UTC week. The peak of these minor events was at 12/1020UTC, which emanated from a visually unassuming sunspot group in the southwest of the Sun, which appeared as a simple dipole. This was one of up to eight sunspot groups on the Sun. Of these groups, three others showed some growth, with this most marked in one in the southern solar hemisphere near the meridian, which saw rapid proliferation for a time (sometimes correlating with a risk of flares), although this growth slowed into the UTC evening.

Also of note were a new region in the northeast, as well as one in the northwest, which both grew into bipolar regions before fading. The low level common-class flaring was well-spread between regions, although there was little change evident in the remainder of the magnetically unipolar and simple bipolar groups.

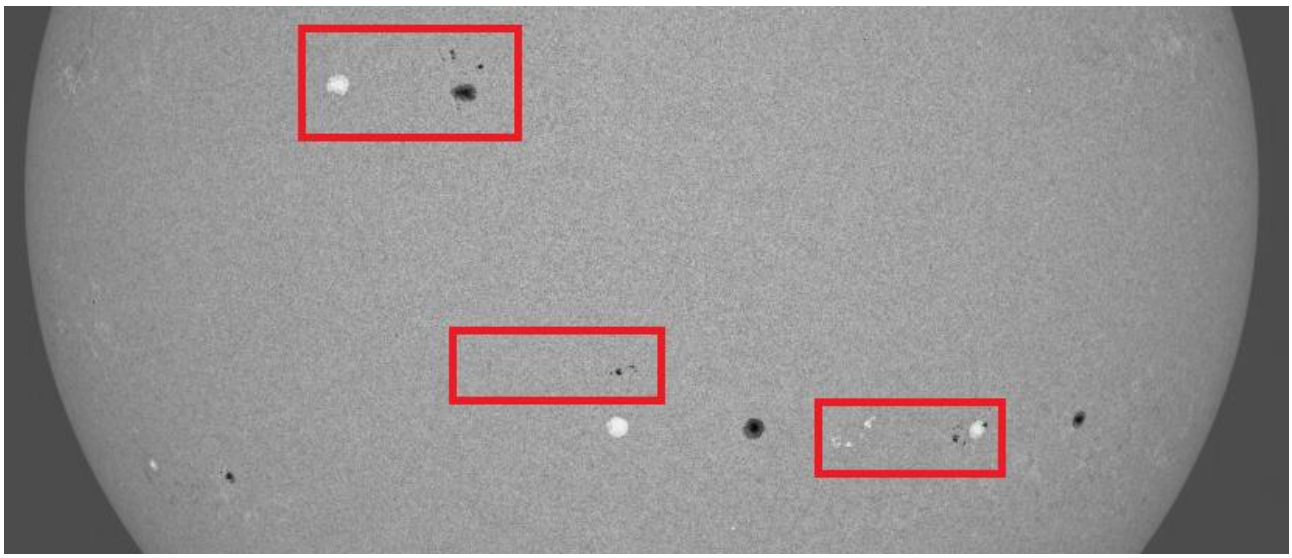

Figure 1: Helioviewer.org-generated difference imagery of some of the main sunspot groups, showing their appearance in white (11/2200UTC) and black, 24 hours later. Of most note are the northern spot group shown boxed in red as well as the developing region boxed near the sentre, with the rightmost showing a decaying trend over the same period.

The southern solar hemisphere is currently showing a large number of small 'filaments' (arcs of plasma), however none of these showed any movement in the period and no Earth-directed Coronal Mass Ejections (CMEs) were observed.

Issued by Met Office Space Weather Advisor, Tel: +44 (0) 330 135 4254 Email: moswoc@metoffice.gov.uk

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Solar Wind / Geomagnetic Activity: Earth appears to be transiting a sector of space under the influence from a waning fast wind environment, probably emanating from the third of a train of three 'coronal holes' that have dominated the past week in terms of geomagnetism.

The solar wind speed was elevated over the past 24 hours, with solar wind measures showing a slight waning tendency. The number of particles comprising the solar wind showed a decline into background levels, while their associated magnetic field also reduced in magnitude to background. The north-south component was erratic at first (between co-aligned and anti-aligned with the Earth's field to lesser and greater effect respectively), but became smoother during the second half of the UTC day, as well as lower in magnitude.

The net result of the above solar wind measures was provisionally mostly quiet, well below Minor Geomagnetic Storm G1.

Energetic Particles / Solar Radiation: No solar radiation storms were observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Solar activity is expected to persist at low levels, with a daily slight chance of isolated moderate-class X-ray flares.

Solar Wind / Geomagnetic Activity: No Coronal Mass Ejections (CMEs) feature in the forecast, and the sole fast wind enhancement is already occurring, is mature and is likely to soon wane. Geomagnetic activity should be below Minor Storm G1 throughout, becoming increasingly quiet with time, and reliably so from the new UTC working week.

Energetic Particles / Solar Radiation: No solar radiation storms are expected.

Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	1	1	1	1
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

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Radio Blackouts - X Ray Flares:

X Ray Flares	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC)	Day 2 (00-24 UTC)	Day 3 (00-24 UTC)	Day 4 (00-24 UTC)
Probability			(%)	(%)	(%)	(%)
Active	R1-R2 M Class	No	15	15	15	15
Very Active	R3 to R5 X	No	1	1	1	1

Solar Radiation Storms - (High Energy Protons):

Radiation Storms	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC)	Day 2 (00-24 UTC)	Day 3 (00-24 UTC)	Day 4 (00-24 UTC)
Probability (Exceedance)			(%)	(%)	(%)	(%)
Active	≥ S1	No	1	1	1	1
Very Active	≥ S3 *	No	1	1	1	1
* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)						

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